Worksheet 4 Programming language translators

Task 1

1. Fill in the blanks in the following:

   When a program is _____ from source code, the _____ can be saved on disk and executed whenever required.

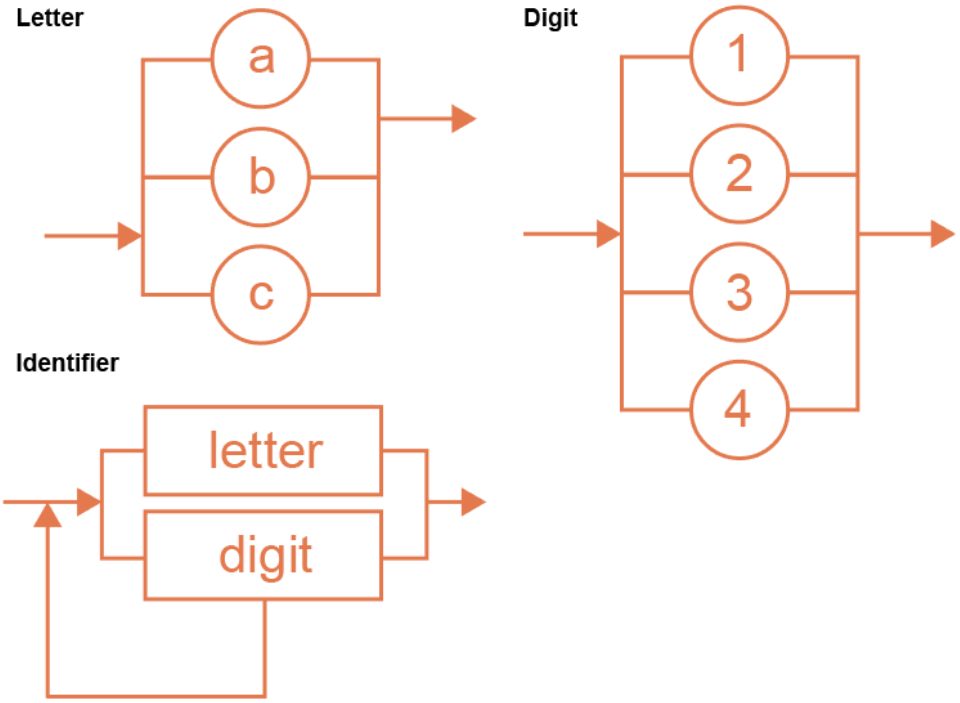
   A / An _____ is useful for program development as parts of the program can be _____ without having to _____a lengthy program each time. However, a _____ program will generally run faster.

2. If you have written a Python or VB program for one type of computer, can you run it on a different type of computer? Explain.

3. Converting code written in a high level language to bytecode might seem like a redundant process – why not just convert straight to machine code? What do you think the advantages of using a bytecode interpreter might be?

Task 2

Look at the following syntax diagrams which show some of the rules of a language. To read the diagrams, start on the left and follow the arrows.



Are the following sequences valid identifiers in this language?

1. a5
2. d
3. abc
4. 111
5. 42c
6. 8b8
7. 3B

Task 3

Compilers perform code optimisation to make the generated machine code more efficient. How might the compiler optimise the following code?

a)
`a = 5`
`b = (a + 240) * 0`	

b)
`value = 0`
`WHILE value < 100:`
`    extra = 20`
`    value = value + extra`	

c)
`temperature = 37`
`IF temperature < 100:`
`   PRINT “OK”`
`ELSE`
`   PRINT “Malfunction”`	

d)
`numbers = []`
`VAT = 0.2`
`FOR i FROM 1 TO 1000:`
`   numbers[i] = i * (2 * VAT)`	